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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/491,789	01/26/2000	Pascal Moniot	S1022/8401	9053

7590 08/22/2003

James H. Morris
Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, MA 02210

EXAMINER

PHAN, MAN U

ART UNIT

PAPER NUMBER

2665

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DATE MAILED: 08/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/491,789

Applicant(s)

Pascal

Examiner

Man Phan

Art Unit

2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jan 26, 2000
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 7, 8, 10-12, 15, 16, 18, 19, 24-27, 29, 30, 32, 37-39, and 4 is/are rejected.
- 7) ☒ Claim(s) 3, 5, 6, 9, 13, 14, 17, 20-23, 28, 31, 33-36, 40, 42, and 43 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Jan 26, 2000 is/are a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4 6) ☐ Other:

DETAILED ACTION

Manic†
1. The application of Pascal for a "System for controlling the rates of concurrent transmissions on a communication channel" filed 01/26/2000 has been examined. This application claims foreign priority based on an application filed in France - 99-01191 on 01/29/1999. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file. The preliminary amendments to the claims have been entered and made of record. Claim 1-43 are pending in the application.

Drawings

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:
Reference characters "cptr1" and "cptr2" as described for Fig. 3 (Page 6, line 10).

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 41 is objected to because of the following informalities: On lines 2 & 3, the "queue indices" should change to --queue indexes-- for the consistency.

Claim 10 is objected to because of the following informalities: Claim 10 should depend on claim 8 instead of claim 9 as shown.

Claims 5, 8, 13-14, 16 are objected to because of the following informalities: "freeing the location" should change to --freeing the surveyed location--.

Claims 31 and 43 are objected to because of the following informalities: "freeing the location" should change to --freeing the accessed location--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by prior art under 35 U.S.C. 103(a).

6. Claims 39, 41 and 27, 29-30 and 8, 10 and 16, 18 are rejected under 35

U.S.C. 103(a) as being unpatentable over Ito (US#6,005,868) in view of Gemar et al.
(US#6,483,839)

With respect to claims 39 and 41, Ito discloses a novel traffic shaping device which can control a cell sending rate for ATM queuing and scheduling according to the essential features of the claims. Ito teaches in Fig. 2 a block circuit diagram illustrated a traffic shaping device for controlling transmission rates, comprising: a memory having defined therein at least first and second queues, each having a plurality of locations (35₁-35_N); a controller (46) including means, for each transmission, for writing an index corresponding to a data cell of the transmission in one of the locations in the first queue or the second queue; means for successively accessing/surveying the locations of the first queue at a higher rate than a cell transmission rate; means for successively accessing/ surveying the location of the second queue; means, if the accessed/surveyed location in the first queue contains an index, for transmitting the corresponding data cell, for freeing the accessed/surveyed location, and for rewriting the index at a location in the first queue that is distant from the accessed/surveyed location by a predetermined value (Col. 2; lines 32 plus, and Col. 6, lines 54 plus). However, Ito does not expressly disclose a means for interrupting the accessing/surveying of the first queue when a location indicated by a rate pointer is reached, and means for incrementing the rate pointer by N locations at the transmission rate of N cells. In the same field of endeavor, Gemar et al. teaches a traffic manager coupled to a communication system for scheduling transmission of information associated with a plurality of connections in the communication system.

Gemar discloses in Fig. 1 a schematic block diagram of a traffic class manager system coupled to an asynchronous transfer mode communication system and a control memory in accordance with an exemplary embodiment of the present invention, in which traffic manager unit 25 preferably provides data packets or data cells as protocol data units (PDU) to ATM network 30. In general, scheduler 34 is a state machine which responds to timing signals from timer 36, control signals from ABR manager 44 across control bus 58, connection information and operational parameters for each connection stored in control memory 48, and connection information in start FIFO memory 40 to place connection information in global priority queue 38. Scheduler 34 selects the highest priority connection information in queue 38 and places that information in schedule FIFO memory 42 for eventual transmission through network 30 (Col. 6, lines 28 plus). With reference to Fig. 2, global priority queue 38 is comprised of a head pointer stored in a column 60 and a tail pointer stored in a column 62. Queue 38 stores head pointers and tail pointers at priority levels 64A-J. Alternatively, queue 38 can store any number of priority locations. Fig. 2 shows exemplary priority levels associated with particular modes of traffic and an exemplary table-type data structure. For example, the out-of-rate UBR traffic mode is given the first priority (e.g. highest) at priority level 64A, and the interval tunnel mode 64J of traffic is given the last priority, level 64J, (e.g., lowest) in queue 38. The head pointer and tail pointer stored in columns 60 and 62, respectively, are simply an address or information which indicates a connection associated with the transmission. The head pointer and the tail pointer generally direct scheduler 34 to memory locations in control memory 48 (Fig. 4; Col. 7, lines 30 plus).

Regarding claims 27, 29-30 and 8, 10, they are method claims corresponding to the apparatus claims 39 and 41 above. Therefore, claims 27, 29-30 and 8, 10 are analyzed and rejected as previously discussed in paragraph above with respect to claims 39 and 41.

With respect to claims 16 and 18, these claims differ from claims Ito in view of Gemar et al. in that the claims recited a computer program product for performing the same basis of steps and apparatus of the prior arts as discussed in the rejection of method and apparatus claims 39 and 41 above. It would have been obvious to a person of ordinary skill in the art to implement a computer program product in Ito in view of Gemar for performing the steps and apparatus as recited in the claims with the motivation being to provide the efficient enhancement to control the rates of multiple transmission using queue pointers in Asynchronous Transfer Mode (ATM) Networks, and easy to maintenance, upgrade.

One skilled in the art would have recognized the need for effectively and efficiently controlling a cell sending rate for ATM queuing and scheduling, and would have applied Gemar's novel use of the queue pointers for the connection state data structure in the control memory into Ito's teaching of the traffic shaping device for controlling the cell sending rate. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Gemar's apparatus and method for scheduling multiple and simultaneous traffic in guaranteed frame rate in ATM communication system into Ito's traffic shaping device with the motivation being to provide a method and system for controlling the rates of multiple transmission.

7. Claims 32, 37-38 and 19, 24-26 and 1-2, 4, 7 and 11, 12, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito (US#6,005,868) in view of Gemar et al. (US#6,483,839) as applied to the claims above, and further in view of Calvignac et al. (US#5,946,297).

With respect to claims 32, 37 and 38, Ito and Gemar et al. disclose the claimed limitations discussed in paragraph 8 above. However, Ito and Gemar et al. do not expressly disclose the claimed feature of the controller, including means, for each transmission of relatively high/low priority, for writing an index corresponding to a data cell of the relatively high/low priority transmission in one of the locations in the first/second queue. In the same field of endeavor, Calvignac et al. teaches a method for receiving and transmitting in a packet network node the packets of connections having a minimum of bandwidth required at connection establishment; the method comprising the steps of receiving a packet in a dedicated connection queue; scheduling, under the control of absolute time, the connection queues according to the rate corresponding to their reserved bandwidth; storing queue identifiers of the scheduled connection queues; reading the stored connection queue identifiers, and if any identifier is found, transmitting the first packet, if any packet is found, of the connection queue corresponding to the identifier read; if no identifier is stored, scheduling the connection queues and transmitting the first packet, if any packet is found, of the scheduled queues (Fig.3; Col. 3, lines 28 plus). Using the two prioritized scheduling mechanisms supporting a mixed traffic generated by RB and NRB connections, the dual scheduling mechanism illustrated in Fig. 2 allows support of the Minimum Service connections in a network node and each

node along the connection paths. Once identified by the ATM label look-up mechanism (100), the cells of the Minimum Service connections are queued in the intermediate queue (101), when it is implemented, before being enqueued in a dedicated Minimum Service connection queue (150). According to the dual scheduling mechanism of the invention, the connection queues of the Minimum Service connections are first scheduled by a shaper unit (111) insuring that each connection will get at least its minimum bandwidth; any type of shaper can be used such as a leaky bucket or a calendar (Col. 5, lines 32 plus).

Regarding claims 1-2, 4, 7 and 19, 24-26, they are method claims corresponding to the apparatus claims 32, 37 and 38 above. Therefore, claim 1-2, 4, 7 and 19, 24-26 are analyzed and rejected as previously discussed in paragraph above with respect to claims 32, 37 and 38.

With respect to claims 11, 12 and 15, these claims differ from claims Ito in view of Gemar et al. and Calvignac et al. in that the claims recited a computer program product for performing the same basis of steps and apparatus of the prior arts as discussed in the rejection of method and apparatus claims 1-2, 4, 7, 19, 24-26 and 32, 37-38 above. It would have been obvious to a person of ordinary skill in the art to implement a computer program product in Ito in view of Gemar et al. and Calvignac et al. for performing the steps and apparatus as recited in the claims with the motivation being to provide the efficient enhancement to control the rates of multiple transmission using queue pointers in Asynchronous Transfer Mode (ATM) Networks, and easy to maintenance, upgrade.

One skilled in the art would have recognized the need for effectively and efficiently controlling a cell sending rate for ATM queuing and scheduling, and would

have applied Calvignac's scheduling of minimum service traffic in a network node, and Gemar's novel use of the queue pointers for the connection state data structure in the control memory into Ito's teaching of the traffic shaping device for controlling the cell sending rate. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Calvignac's scheduling method and apparatus for supporting ATM connections having a guaranteed minimum bandwidth, and Gemar's apparatus and method for scheduling multiple and simultaneous traffic in guaranteed frame rate in ATM communication system into Ito's traffic shaping device with the motivation being to provide a method and system for controlling the rates of multiple transmission.

Allowable Subject Matter

4. Claims 3, 5-6, 9, 13-14, 17, 20-23, 28, 31, 33-36, 40 and 42-43 are objected to as being dependent upon the rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

6. The following is an examiner's statement of reasons for the indication of allowable subject matter: The closest prior art of record fails to disclose or suggest the steps of writing a ghost index into at least one of the locations in the first queue; and if the surveyed location in the first queue contains a ghost index, freeing the location and

rewriting the ghost index at one of the locations in the first queue, wherein the ghost index is rewritten at a random distance from the surveyed location, as specifically recited in the claims 3, 5-6 and 13-14 and 23, 31, 36, 43. The closest prior art of record also fails to disclose or suggest further comprising the step of if the surveyed location in the second queue contains an index, transmitting the corresponding data cell when the surveyed location in the first queue does not contain an index or when the surveying of the first queue is interrupt, as recited in claims 9, 17, 28, 40; wherein the index is rewritten in the first queue at a distance from the accessed location that is inversely proportional to the rate of the corresponding transmission, as recited in claims 20, 33. The closest prior art of record also fails to disclose or suggest further comprising the step of associating a first cell pointer with the first queue and a second cell pointer with the second queue; incrementing each cell pointer when the respective accessed location is not occupied; incrementing one of the cell pointers when the corresponding data cell is transmitted; and not incrementing the second cell pointer when the accessed locations in the first and second queues are both occupied, as recited in claims 21,-22, 34-35, 42.

8. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Lam et al. (US#6,198,724) is cited to show the ATM cell scheduling method and apparatus.

The Simpson et al.(US#6,021,115) is cited to show the ATM switch flow control.

The Jones (US#6,044,060) is cited to show traffic shaping ATM network switch.

The Sato (US#5,719,865) is cited to show traffic shaping method and apparatus for ATM switching unit.

The Charny et al. (US#6,072,772) is cited to show the method for providing bandwidth and delay guarantees in a crossbar switch with speedup.

The Hayter et al. (US#5,629,937) is cited to show the apparatus and method for ATM queueing and scheduling.

The Moyal (US#6,445,680) is cited to show the linked list based least recently used arbiter.

The Cukier et al. (US#6,101,187) is cited to show the method and system for multicasting cells in an ATM protocol adapter.

The Zheng (US#5,535,201) is cited to show the traffic shaping system using two dimensional timing chains.

The Regache (US#5,579,312) is cited to show the apparatus and method for scheduling the transmission of cells guaranteed bandwidth virtual channels.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (703)305-1029. The examiner can normally be reached on Mon - Fri from 6:30 to 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (703) 308-6602. The fax phone number for the organization where this application or proceeding is assigned is (703)305-3988.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

11. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: (703) 305-9051, (for formal communications intended for entry)

Or: (703) 305-3988 (for informal or draft communications, please label

"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021

Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Mphan

08/19/2003.

M. u. phan